

WHAT IS CLAIMED IS

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1. A communication device comprising:
a transmitter for transmitting an ultra
wide band wireless wave pulse;
a plurality of receivers which are
10 disposed equidistant from the transmitter and
receive the ultra wide band wireless wave pulse; and
distance-measuring equipment which detects
a distance or a direction to an object based on
reception times when each of the receivers receives
15 the ultra wide band wireless wave pulse directly
from the transmitter and an object-reflected wave
thereof.

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2. The communication device as claimed in
claim 1, wherein communication is performed by the
transmitter and the receivers using the ultra wide
25 band wireless wave pulse.

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3. A vehicle-installed system comprising:
a plurality of appliances, each of which
is installed in a vehicle and is equipped with a
communication device which performs communication
between the appliances using an ultra wide band
35 wireless wave pulse.

4. A communication device comprising:
first communicating means for performing
5 communication using an ultra wide band wireless wave
pulse; and
communication controlling means which
searches for a second communicating means around the
first communicating means and establishes a
10 communication network with the second communicating
means.

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5. The communication device as claimed in
claim 4, wherein the communication controlling means
establishes a communication network with a third
communicating means which is located out of a
20 communication area of the first communicating means
but is located within the communication area of the
second communicating means with which communication
has been established.

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6. A communication system comprising:
a plurality of communication devices, each
30 of which is able to establish communication with
another communication device located within a
predetermined area by searching for the other
communication device located within the
predetermined area, wherein communication with yet
35 another communication device located out of the
predetermined area is established via a
communicating device located within the

predetermined area.

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7. An anti-theft system comprising:

a communication device for transmitting
and receiving an ultra wide band wireless wave
pulse; and

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a warning device which generates an alarm
if a moving object is continuously detected in a
predetermined area for a predetermined time, said
detection of the moving object being based on a
reception of a moving object-reflected wave of the
15 ultra wide band wireless wave pulse by the
communication device.

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8. A communication system comprising:

a detector including a transmitter which
transmits a response request using an ultra wide
band wireless wave pulse; a plurality of receivers
25 which are disposed equidistant from the transmitter
and receive the ultra wide band wireless wave pulse;
and distance-measuring equipment which detects a
distance or a direction to an object based on
reception times when each of receivers receives the
30 ultra wide band wireless wave pulse directly from
the transmitter and an object-reflected wave
thereof; and

a response device including a receiver
which is installed on the object and receives the
35 ultra wide band wireless wave pulse transmitted from
the transmitter of the detector; and a transmitter
which transmits a response request using another

ultra wide band wireless wave pulse in response to the reception of the ultra wide band wireless wave pulse from the detector by the receiver of the response device.